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NEWS	23	JUN 20	INPADOC databases enhanced with first page images
NEWS	24	JUN 20	PATDPA database updates to end in June 2011
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BIOTECHNO, WPIDS, BIOENG, DISSABS  
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=> S Cellulomonas (3A) 69B4  
L1 9 CELLULOMONAS (3A) 69B4

=> duplicate  
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L2 6 DUPLICATE REMOVE L1 (3 DUPLICATES REMOVED)

=> d l2 1-6 bib ab

L2 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN  
AN 2009:1536437 HCAPLUS  
DN 152:29839  
TI Libraries of proteinase variants and databases of variant properties and  
their use in protein engineering  
IN Basler, Joshua R.; Cascao-Pereira, Luis G.; Estell, David A.; Kellis,  
James T., Jr.  
PA Danisco US, Inc., USA  
SO PCT Int. Appl., 350 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2009149200	A2	20091210	WO 2009-US46156	20090603
	WO 2009149200	A3	20100729		
	W:	AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
	RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA			
	AU 2009256169	A1	20091210	AU 2009-256169	20090603
	CA 2726370	A1	20091210	CA 2009-2726370	20090603
	KR 2011020245	A	20110302	KR 2010-7027454	20090603
	EP 2297316	A2	20110323	EP 2009-759359	20090603
	R:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, AL, BA, RS			
	CN 102046783	A	20110504	CN 2009-80120416	20090603
	MX 2010013121	A	20110121	MX 2010-13121	20101130
PRAI	US 2008-59695P	P	20080606		
	WO 2009-US46156	W	20090603		

AB A method of protein engineering that builds databases correlating sequence variation with enzyme properties is described. A library of variants is generated and members of the library are tested for properties of interest. The resulting data are compiled into a database that can be used to identify functionally important residues and domains of the enzyme

and can have predictive utility in protein engineering. This may allow the simultaneous optimization of two or more properties of the enzyme. The present invention also provides variant subtilisins suitable for various uses. A library of single and multiple substitution variants of subtilisin BPN' was prepared by PCR with mutagenic primers. These were then tested for the effects of the substitution on stability and catalytic activity against assay substrates and substrates for determining effectiveness in laundry detergents. This allowed the identification of substitutions that improved the com. valuable properties of the enzyme and to combinations of substitutions that improved stability, catalytic activity, and performance against wash performance test substrates.

L2 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 1  
 AN 2008:501242 HCAPLUS  
 DN 148:511886  
 TI Engineering of multiple mutation variants of Cellulomonas serine protease with improved properties, and use in detergents, animal feed and textile processing  
 IN Aehle, Wolfgang; Estell, David A.; Hommes, Ronaldus W.J.; Jones, Brian E.; Kolkman, Marc; Leeftang, Chris; Oh, Hiroshi; Poulou, Ayrookaran J.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo  
 PA Danisco US, Inc., USA  
 SO PCT Int. Appl., 166 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2008048392	A1	20080424	WO 2007-US18909	20070829
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	US 20080063774	A1	20080313	US 2007-809104	20070531
	CA 2667043	A1	20080424	CA 2007-2667043	20070829
	KR 2009075825	A	20090709	KR 2009-7007937	20070829
	EP 2084273	A1	20090805	EP 2007-837430	20070829
	R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR				
	JP 2010506590	T	20100304	JP 2009-533297	20070829
	IN 2009DN02135	A	20100820	IN 2009-DN2135	20090331
	MX 2009003936	A	20090423	MX 2009-3936	20090414
	CN 101528920	A	20090909	CN 2007-80038982	20090420
PRAI	US 2006-583334	A	20061019		
	US 2007-809104	A	20070531		
	US 2003-523609P	P	20031119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		
	WO 2007-US18909	W	20070829		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides Micrococcineae serine proteases having multiple substitutions. In particular, the present invention provides

Cellulomonas 69B4 serine proteases having multiple substitutions, DNA encoding these proteases, vectors comprising the DNA encoding the proteases, host cells transformed with the vector DNA, and enzymes produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising these serine protease variants. In particularly preferred embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN

AN 2009:908063 HCAPLUS

DN 151:214451

TI Multiple mutation variants of Cellulomonas serine protease for use in cleaning compositions, feed compositions and textile processing

IN Oh, Hiroshi; Leeftang, Chris; Estell, David A.; Jones, Brian E.; Hommes, Ronaldus W. J.; Kolkman, Marc; Poulouse, Ayrookaran J.; Shaw, Andrew; Van Der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo; Aehle, Wolfgang

PA Danisco US, Inc., USA

SO Can. Pat. Appl., 162pp.

CODEN: CPXXEB

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2667043	A1	20080424	CA 2007-2667043	20070829
	US 20080063774	A1	20080313	US 2007-809104	20070531
	WO 2008048392	A1	20080424	WO 2007-US18909	20070829
	W:				
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	RW:				
	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	US 2006-583334	A	20061019		
	US 2007-809104	A	20070531		
	WO 2007-US18909	W	20070829		
	US 2003-523609P	P	20031119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides Micrococcineae serine proteases having multiple substitutions. In particular, the present invention provides Cellulomonas 69B4 serine proteases having multiple substitutions, DNA encoding these proteases, vectors comprising the DNA encoding the proteases, host cells transformed with the vector DNA, and enzymes produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising these serine protease variants. In particularly preferred embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

L2 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 2  
 AN 2005:493693 HCAPLUS  
 DN 143:54475  
 TI Protein and DNA sequences of serine proteases isolated from Micrococcineae spp., vectors and host cells incorporating same and applications thereof  
 IN Jones, Brian Edward; Kolkman, Marc; Leeftang, Chris; Poulouse, Ayrookaran J.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo  
 PA Genencor International, Inc., USA  
 SO PCT Int. Appl., 333 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005052161	A2	20050609	WO 2004-US39006	20041119
	WO 2005052161	A3	20051103		
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	RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2009250976	A1	20100114	AU 2009-250976	20091216
PRAI	US 2003-523609P	P	20031119		
	AU 2004-293826	A3	20041119		

AB The present invention provides novel serine proteases, novel genetic material encoding these enzymes, and proteolytic proteins obtained from Micrococcineae spp., including but not limited to Cellulomonas spp. and variant proteins developed therefrom. In particular, the present invention provides protease compns. obtained from a Cellulomonas spp, DNA encoding the protease, vectors comprising the DNA encoding the protease, host cells transformed with the vector DNA, and an enzyme produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising protease(s) obtained from a Micrococcineae spp., including but not limited to Cellulomonas spp. In alternative embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These mutant proteases also find use in numerous applications.

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L2 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 3  
 AN 2005:490422 HCAPLUS  
 DN 143:55635  
 TI Cloning, sequence and mutagenesis of Asp serine proteinase from Cellulomonas and use of variant Asp in detergents, feed and textile processing  
 IN Jones, Brian Edward; Kolkman, Marc; Leeftang, Chris; Oh, Hiroshi; Poulouse, Ayrookaran J.; Sadlowski, Eugene S.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo  
 PA Genencor International, Inc., USA; The Procter & Gamble Company

SO PCT Int. Appl., 356 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005052146	A2	20050609	WO 2004-US39066	20041119
	WO 2005052146	A3	20051110		
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	RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2004293826	A1	20050609	AU 2004-293826	20041119
	AU 2004293826	B2	20090917		
	CA 2546451	A1	20050609	CA 2004-2546451	20041119
	EP 1694847	A2	20060830	EP 2004-811731	20041119
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	CN 1906303	A	20070131	CN 2004-80040520	20041119
	BR 2004016797	A	20070417	BR 2004-16797	20041119
	JP 2007515164	T	20070614	JP 2006-541585	20041119
	MX 2006005107	A	20060714	MX 2006-5107	20060504
	IN 2006DN02866	A	20070810	IN 2006-DN2866	20060519
	KR 2006121212	A	20061128	KR 2006-7012183	20060619
	US 20080063774	A1	20080313	US 2007-809104	20070531
	AU 2009250976	A1	20100114	AU 2009-250976	20091216
PRAI	US 2003-523609P	P	20031119		
	AU 2004-293826	A3	20041119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		
	US 2006-583334	A1	20061019		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides novel serine proteases, novel genetic material encoding these enzymes, and proteolytic proteins obtained from Micrococcineae spp., including but not limited to Cellulomonas spp. and variant proteins developed therefrom. In particular, the present invention provides serine protease compns. obtained from a Cellulomonas spp., DNA encoding the serine protease, vectors comprising the DNA encoding the serine protease, host cells transformed with the vector DNA, and an enzyme produced by the host cells. The nucleotide sequence of the gene asp and the encoded amino acid sequence of the Asp serine protease from Cellulomonas strain 69B4 are disclosed. The crystal structure and the atomic coordinates of the Asp serine protease from Cellulomonas 69B4 are provided. The nucleotide sequences and the encoded amino acid sequences of homologous serine proteases from Cellulomonas spp. and related microorganisms are also provided. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising protease(s) obtained from a Micrococcineae spp., including but not limited to Cellulomonas spp. In alternative embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These mutant proteases also find use in numerous applications.

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 2        THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2    ANSWER 6 OF 6    HCAPLUS    COPYRIGHT 2011 ACS on STN  
AN    2005:889465    HCAPLUS  
DN    144:124778  
TI    Cellulomonas bogoriensis sp. nov., an alkaliphilic cellulomonad  
AU    Jones, Brian E.; Grant, William D.; Duckworth, A. W.; Schumann, Peter;  
      Weiss, Norbert; Stackebrandt, Erko  
CS    Genencor International BV, Leiden, 2333 CN, Neth.  
SO    International Journal of Systematic and Evolutionary Microbiology (2005),  
      55(4), 1711-1714  
      CODEN: ISEMF5; ISSN: 1466-5026  
PB    Society for General Microbiology  
DT    Journal  
LA    English  
AB    An alkaliphilic, slightly halotolerant, chemo-organotrophic, Gram-pos.,  
      rod-shaped bacterium, strain 69B4T, was isolated from the sediment of the  
      littoral zone of Lake Bogoria, Kenya. Phylogenetically, it is a member of  
      the genus Cellulomonas, showing less than 97.5% sequence similarity to the  
      type strains of other Cellulomonas species. The highest level of  
      similarity, albeit moderate, was found with respect to Cellulomonas  
      cellasea DSM 20118T. Chemotaxonomic properties confirm the 16S rRNA  
      gene-based generic affiliation, i.e. a DNA G+C content of 71.5 mol.%,  
      anteiso-C15:0 and C16:0 as the major fatty acids, MK-9(H4) as the major  
      isoprenoid quinone, a peptidoglycan containing L-ornithine as the diamino acid  
      and D-aspartic acid in the interpeptide bridge and phosphatidylglycerol as  
      the only identified main polar lipid. The strain is aerobic to  
      facultatively anaerobic, being capable of growth under strictly anaerobic  
      conditions. Optimal growth occurs between pH values 9.0 and 10.0. On the  
      basis of its distinct phylogenetic position and metabolic properties,  
      strain 69B4T represents a novel species of the genus Cellulomonas, for  
      which the name Cellulomonas bogoriensis sp. nov. is proposed. The type  
      strain is 69B4T (=DSM 16987T =CIP 108683T).  
OSC.G 11        THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)  
RE.CNT 17        THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

=>

<-----User Break----->

=> S    Cellulomonas (3A) (protease or proteinase or peptidase)  
L3        17 CELLULOMONAS (3A) (PROTEASE OR PROTEINASE OR PEPTIDASE)  
  
=> S (alkaline or Alkaliphilic) (3A) (protease or proteinase or peptidase)  
L4        14910 (ALKALINE OR ALKALIPHILIC) (3A) (PROTEASE OR PROTEINASE OR PEPTI  
          DASE)  
  
=> 13 and 14  
L3 IS NOT A RECOGNIZED COMMAND  
The previous command name entered was not recognized by the system.  
For a list of commands available to you in the current file, enter  
"HELP COMMANDS" at an arrow prompt (=>).  
  
=> s 13 and 14  
L5        0 L3 AND L4  
  
=> S (SIZE OR MOLECULAR WEIGHT OR MW or kda or kd) (3A) 200  
L6        67147 (SIZE OR MOLECULAR WEIGHT OR MW OR KDA OR KD) (3A) 200



=> s 13 and 6  
L7 4 L3 AND 6

=> duplicate  
ENTER REMOVE, IDENTIFY, ONLY, OR (?):remove  
ENTER L# LIST OR (END):  
ENTER L# LIST OR (END):17  
DUPLICATE PREFERENCE IS 'HCAPLUS, WPIDS'  
KEEP DUPLICATES FROM MORE THAN ONE FILE? Y/(N):n  
PROCESSING COMPLETED FOR L7  
L8 4 DUPLICATE REMOVE L7 (0 DUPLICATES REMOVED)

=> d 18 1-4 bib ab

L8 ANSWER 1 OF 4 HCAPLUS COPYRIGHT 2011 ACS on STN  
AN 2009:908063 HCAPLUS  
DN 151:214451  
TI Multiple mutation variants of Cellulomonas serine protease for use in  
cleaning compositions, feed compositions and textile processing  
IN Oh, Hiroshi; Leeftang, Chris; Estell, David A.; Jones, Brian E.; Hommes,  
Ronaldus W. J.; Kolkman, Marc; Poulouse, Ayrookaran J.; Shaw, Andrew; Van  
Der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo; Aehle, Wolfgang  
PA Danisco US, Inc., USA  
SO Can. Pat. Appl., 162pp.  
CODEN: CPXXEB  
DT Patent  
LA English  
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	CA 2667043	A1	20080424	CA 2007-2667043	20070829
	US 20080063774	A1	20080313	US 2007-809104	20070531
	WO 2008048392	A1	20080424	WO 2007-US18909	20070829
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	US 2006-583334	A	20061019		
	US 2007-809104	A	20070531		
	WO 2007-US18909	W	20070829		
	US 2003-523609P	P	20031119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides Micrococcineae serine proteases having multiple substitutions. In particular, the present invention provides Cellulomonas 69B4 serine proteases having multiple substitutions, DNA encoding these proteases, vectors comprising the DNA encoding the proteases, host cells transformed with the vector DNA, and enzymes produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising these serine protease variants. In particularly preferred embodiments, the present invention provides mutant

(i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

L8 ANSWER 2 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN  
AN 2008-F00278 [200834] WPIDS  
CR 2005-425197; 2005-425198  
TI New multiple mutation variants of serine protease, useful in making  
cleaning composition, animal feed, or textile or leather processing  
composition  
DC B04; D13; D16; D18; D21; D25; F06  
IN AEHLE W; ESTELL D A; HOMMES R W; HOMMES R W J; JONES B E; KOLKMAN M;  
LEEFLANG C; OH H; POULOSE A J; SHAW A; VAN DER KLEIJ W A H; VAN MARREWIJK  
L; ERLER W; HOLMES R W J; HUANG H; MARREWIJK L V; VAN D K W A H; XIAO A  
PA (DASC-C) DANISCO US INC; (DASC-C) DANISCO US INC GENENCOR DIV; (DASC-C)  
DANISCO US INC GENECOR DIV  
CYC 121  
PIA WO 2008048392 A1 20080424 (200834)\* EN 166[7]  
EP 2084273 A1 20090805 (200952) EN  
KR 2009075825 A 20090709 (200956) KO  
CA 2667043 A1 20080424 (200959) EN  
CN 101528920 A 20090909 (200962) ZH  
MX 2009003936 A1 20090430 (200979) ES  
JP 2010506590 T 20100304 (201016) JA 210  
PH 12009500603 A 20080424 (201060) EN  
IN 2009DN02135 A 20100820 (201064) EN  
ADT WO 2008048392 A1 WO 2007-US18909 20070829; CA 2667043 A1 CA 2007-2667043  
20070829; CN 101528920 A CN 2007-80038982 20070829; EP 2084273 A1 EP  
2007-837430 20070829; EP 2084273 A1 PCT Application WO 2007-US18909  
20070829; KR 2009075825 A PCT Application WO 2007-US18909 20070829; CA  
2667043 A1 PCT Application WO 2007-US18909 20070829; CN 101528920 A PCT  
Application WO 2007-US18909 20070829; MX 2009003936 A1 PCT Application WO  
2007-US18909 20070829; JP 2010506590 T PCT Application WO 2007-US18909  
20070829; PH 12009500603 A PCT Application WO 2007-US18909 20070829; CA  
2667043 A1 PCT Nat. Entry CA 2007-2667043 20090420; JP 2010506590 T JP  
2009-533297 20070829; KR 2009075825 A KR 2009-707937 20070829; PH  
12009500603 A PH 2009-500603 20070829; PH 12009500603 A PCT Nat. Entry PH  
2009-500603 20090401; MX 2009003936 A1 MX 2009-3936 20090414; IN  
2009DN02135 A PCT Application WO 2007-US18909 20070829; IN 2009DN02135 A  
IN 2009-DN2135 20090331  
FDT EP 2084273 A1 Based on WO 2008048392 A; KR 2009075825 A Based on WO  
2008048392 A; CA 2667043 A1 Based on WO 2008048392 A; CN 101528920 A Based  
on WO 2008048392 A; MX 2009003936 A1 Based on WO 2008048392 A; JP  
2010506590 T Based on WO 2008048392 A; PH 12009500603 A Based on WO  
2008048392 A  
PRAI US 2007-809104 20070531  
US 2006-583334 20061019  
AB WO 2008048392 A1 UPAB: 20080528  
NOVELTY - An isolated serine protease variant having an amino acid  
sequence comprising at least two amino acid substitutions, where the  
substitutions are made at positions equivalent to the positions in a  
Cellulomonas 69B4 protease comprising the amino acid sequence of SEQ  
ID NO: 8, is new.  
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are:  
(1) a composition comprising the isolated serine protease variant;  
(2) a polynucleotide sequence encoding the isolated serine protease  
variant;  
(3) an expression vector comprising a polynucleotide sequence  
encoding the isolated serine protease variant;  
(4) a host cell comprising the expression vector;  
(5) a cleaning composition comprising at least one serine protease  
variant;

(6) a method of cleaning by contacting a surface and/or an article comprising a fabric with the cleaning composition, and optionally washing and/or rinsing the surface or material;

(7) an animal feed comprising the serine protease variant; and

(8) a textile or leather processing composition comprising the serine protease variant.

USE - The variant is useful in making cleaning composition, animal feed, or textile or leather processing composition (claimed). The cleaning composition may be used as fabric cleaning composition, or for may also be used for personal care, skin, and hair cleaning compositions.

ADVANTAGE - The present invention provides serine protease variant having improved acid stability, thermostability, LAS stability, activity, caseinolytic activity, keratinolytic activity, wash performance activity, dishwashing performance activity, and stain removal activity, and altered surface property.

L8 ANSWER 3 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN  
AN 2005-425198 [200543] WPIDS  
CR 2005-425197; 2008-F00278  
DNC C2005-130512 [200543]  
TI New serine protease (isolated from a member of the Micrococcineae) useful in e.g. cleaning composition and animal feed composition  
DC D13; D16; D18; D25; F06  
IN JONES B E; KOLKMAN M; LEEFLANG C; POULOSE A J; SHAW A; VAN DER KLEIJ W A; VAN MARREWIK L  
PA (GEMV-C) GENENCOR INT INC  
CYC 106  
PIA WO 2005052161 A2 20050609 (200543)\* EN 333[39]  
ADT WO 2005052161 A2 WO 2004-US39006 20041119  
PRAI US 2003-523609P 20031119  
AB WO 2005052161 A2 UPAB: 20051222

NOVELTY - Isolated serine protease (I), obtained from a member of the Micrococcineae, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) compositions comprising an isolated serine protease having immunological cross-reactivity with the serine proteases obtained from a member of the Micrococcineae and particularly the protease obtained from Cellomonas 69B4;

(2) an isolated serine protease comprising at least 60% amino acid identity with the serine protease of a fully defined 189 amino acid (SEQ ID Number 8) sequence given in the specification;

(3) an isolated protease variant having an amino acid sequence comprising at least one substitution of an amino acid made at a position equivalent to a position in a Cellulomonas 69B4 protease comprising the amino acid sequence of SEQ ID Number 8;

(4) expression vectors comprising polynucleotide sequences encoding the protease variants;

(5) host cells comprising the expression vectors;

(6) serine proteases produced by the host cells;

(7) a variant protease comprising one of 13 fully defined 85-428 amino acid sequences (SEQ ID Number 54, SEQ ID Number 56, SEQ ID Number 58,

SEQ ID Number 60, SEQ ID Number 62, SEQ ID Number 64, SEQ ID Number 66, SEQ ID Number 68, SEQ ID Number 70, SEQ ID Number 72, SEQ ID Number 74, SEQ ID Number 76 or SEQ ID Number 78);

(8) a composition comprising at least a portion of (I), where the protease is encoded by a polynucleotide sequences of: a fully defined 1680 base pair (SEQ ID Number 1) sequence given in the specification, a fully defined 1488 base pair (SEQ ID Number 2) sequence given in the specification, a fully defined 1444 base pair (SEQ ID Number 3) sequence given in the

specification or a fully defined 587 base pair (SEQ ID Number 4) sequence given in the specification;

(9) a variant serine protease, where the protease comprises at least one substitution corresponding to the amino acid positions in SEQ ID Number 8, and the variant protease has better performance in at least one of: keratin hydrolysis, thermostability, casein activity, LAS stability and/or cleaning, as compared to wild-type *Cellulomonas* 69B4 protease;

(10) an isolated polynucleotide comprising a nucleotide sequence having at least 70% identity to SEQ ID Number 4, or being capable of hybridizing to a probe derived from the nucleotide sequence of SEQ ID Number 4, under conditions of intermediate to high stringency, or being complementary to the nucleotide sequence of SEQ ID Number 4;

(11) a vector comprising the isolated polynucleotide;

(12) a host cell transformed with the vector comprising the isolated polynucleotide;

(13) a polynucleotide comprising a sequence complementary to at least a portion of the sequence of SEQ ID Number 4;

(14) a method of producing an enzyme having protease activity, comprising: transforming a host cell with an expression vector comprising a polynucleotide having at least 70% sequence identity to SEQ ID Number 4; cultivating the transformed host cell under conditions suitable for the host cell to produce the protease; and recovering the protease;

(15) a probe comprising the polynucleotide sequence substantially identical to a corresponding fragment of SEQ ID Number 4, where the probe is used to detect a nucleic acid sequence coding for an enzyme having proteolytic activity, and the nucleic acid sequence is obtained from a member of the Micrococcineae;

(16) a cleaning composition comprising at least one serine protease obtained from a member of the Micrococcineae;

(17) a composition comprising (I) and at least one stabilizing agent; and

(18) an animal feed comprising (I).

Phe-Asp-Val-Ile-Gly-Gly-Asn-Ala-Tyr-Thr (SEQ ID Number 8)  
G-C-G-C-G-C-T-G-C-G (SEQ ID Number 1) A-T-G-A-C-A-C-C-A-C (SEQ ID Number 2)  
A-A-C-G-A-G-C-C-C-G (SEQ ID Number 3) T-T-C-G-A-C-G-T-G-A (SEQ ID Number 4)

USE - The invention deals with serine proteases, genetic material encoding the proteases, proteolytic proteins obtained from Micrococcineae spp, variant proteins developed from them, vectors comprising the DNA encoding the protease, host cells transformed with the vector DNA and enzymes produced by the host cells. (I) is useful in cleaning compositions and animal feed compositions (all claimed). (I) is useful in laundry and dish detergents. (I) is useful in textile and leather processing compositions.

ADVANTAGE - (I) is extremely stable. The isolated polynucleotide of (I) provides the capability of isolating further polynucleotides, which encode proteins having serine protease activity. The enzyme compositions have comparable or improved wash performance, as compared to presently used subtilisin proteases.

L8 ANSWER 4 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN  
AN 2005-425197 [200543] WPIDS  
CR 2005-425198; 2008-F00278  
DNC C2005-130511 [200543]  
TI New serine protease obtained from a member of the Micrococcineae, useful in preparing cleaning, animal feed or textile or leather processing compositions  
DC B04; C06; D12; D13; D16; D18; D21; D25; F06  
IN AEHLE W; ESTELL D A; HOMMES R W J; JONES B; JONES B E; KOLKMAN M; LEEFLANG C; OH H; POULOSE A; POULOSE A J; SADLOWSKI E; SADLOWSKI E S; SADLOWSKI S; SHAW A; VAN DER KLEIJ W; VAN DER KLEIJ W A; VAN DER KLEIJ W A H; VAN DER KLEY W A H; VAN MARREWIJK L; VAN MARREWIJK L P M; MARREWIJK L V

PA (GEMV-C) GENENCOR INT; (GEMV-C) GENENCOR INT INC; (PROC-C) PROCTER  
 &  
 GAMBLE CO; (PROC-C) PROCTER&GAMBLE CO;  
 (AEHL-I) AEHLE W; (ESTE-I) ESTELL D  
 A; (HOMM-I) HOMMES R W J; (JONE-I) JONES B E; (KOLK-I) KOLKMAN M; (LEEF-I)  
 LEEFLANG C; (OH HH-I) OH H; (POUL-I) POULOSE A J; (SHAW-I) SHAW A; (VKLE-I)  
 VAN DER KLEY W A H; (VMAR-I) VAN MARREWIJK L P M; (DASC-C) DANISCO US INC

CYC 107

PIA WO 2005052146 A2 20050609 (200543)\* EN 66[39]  
 EP 1694847 A2 20060830 (200657) EN  
 AU 2004293826 A1 20050609 (200675) EN  
 MX 2006005107 A1 20060801 (200701) ES  
 BR 2004016797 A 20070417 (200729) PT  
 KR 2006121212 A 20061128 (200735) KO  
 CN 1906303 A 20070131 (200740) ZH  
 JP 2007515164 T 20070614 (200741) JA 317  
 IN 2006DN02866 A 20070810 (200780) EN  
 US 20080063774 A1 20080313 (200822) EN  
 AU 2004293826 B2 20090917 (200965) EN  
 AU 2009250976 A1 20100114 (201010)# EN

ADT WO 2005052146 A2 WO 2004-US39066 20041119; US 20080063774 A1 Provisional  
 US 2003-523609P 20031119; AU 2004293826 A1 AU 2004-293826 20041119; AU  
 2004293826 B2 AU 2004-293826 20041119; BR 2004016797 A BR 2004-16797  
 20041119; CN 1906303 A CN 2004-80040520 20041119; EP 1694847 A2 EP  
 2004-811731 20041119; EP 1694847 A2 WO 2004-US39066 20041119; MX  
 2006005107 A1 WO 2004-US39066 20041119; BR 2004016797 A WO 2004-US39066  
 20041119; KR 2006121212 A WO 2004-US39066 20041119; JP 2007515164 T WO  
 2004-US39066 20041119; IN 2006DN02866 A WO 2004-US39066 20041119; US  
 20080063774 A1 CIP of WO 2004-US39066 20041119; JP 2007515164 T JP  
 2006-541585 20041119; US 20080063774 A1 CIP of US 2006-576331 20060418; MX  
 2006005107 A1 MX 2006-5107 20060504; IN 2006DN02866 A IN 2006-DN2866  
 20060519; KR 2006121212 A KR 2006-712183 20060619; US 20080063774 A1 Cont  
 of US 2006-583334 20061019; US 20080063774 A1 US 2007-809104 20070531; AU  
 2009250976 A1 Div Ex AU 2004-293826 20041119; AU 2009250976 A1 AU  
 2009-250976 20091216

FDT EP 1694847 A2 Based on WO 2005052146 A; AU 2004293826 A1 Based on WO  
 2005052146 A; MX 2006005107 A1 Based on WO 2005052146 A; BR 2004016797 A  
 Based on WO 2005052146 A; KR 2006121212 A Based on WO 2005052146 A; JP  
 2007515164 T Based on WO 2005052146 A; AU 2004293826 B2 Based on WO  
 2005052146 A

PRAI US 2003-523609P 20031119  
 WO 2004-US39066 20041119  
 US 2006-576331 20060418  
 US 2006-583334 20061019  
 US 2007-809104 20070531  
 AU 2009-250976 20091216

AB WO 2005052146 A2 UPAB: 20051222

NOVELTY - An isolated serine protease obtained from a member of the  
 Micrococccineae, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the  
 following:

(1) a composition comprising an isolated serine protease having  
 immunological cross-reactivity with the serine protease or at least a  
 portion of the isolated serine protease;

(2) an isolated protease variant having an amino acid sequence  
 comprising at least one substitution of an amino acid made at a position  
 equivalent to a position in a Cellulomonas 69B4 protease comprising  
 the 189-amino acid sequence (SEQ ID NO: 8);

(3) an isolated polynucleotide comprising a nucleotide sequence (i)  
 having at least 70% identity to the 584-bp sequence (SEQ ID NO: 4), or  
 (ii) being capable of hybridizing to a probe derived from the 584-bp

sequence (SEQ ID NO: 4), under conditions of intermediate to high stringency, or (iii) being complementary to the 584-bp sequence (SEQ ID NO: 4);

(4) an expression vector comprising a polynucleotide sequence encoding the protease variant;

(5) a host cell comprising or transformed with the expression vector;

(6) a method of producing an enzyme having protease activity;

(7) a probe comprising a 4-150 polynucleotide sequence substantially identical to a corresponding fragment of the 584-bp sequence (SEQ ID NO: 4), for detecting a nucleic acid sequence coding for an enzyme having proteolytic activity and obtained from a member of the Micrococcineae;

(8) a cleaning composition comprising at least one serine protease obtained from a member of the Micrococcineae or a proteolytic enzyme comprising an amino acid sequence having at least 70% sequence identity to the 584-bp sequence (SEQ ID NO: 4), and a suitable cleaning formulation;

(9) a method of cleaning; and

(10) an animal feed comprising the serine protease.

USE - The serine protease is useful in preparing cleaning compositions, animal feed compositions or textile or leather processing compositions (claimed).

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